

CLAIMS

We claim:

1. A transmitting and receiving device comprising:  
a transmitting device for producing a transmission signal,  
a receiving device for producing a received signal,  
and  
a compensation device which is connected to the transmitting device and to the receiving device and which at least reduces any crosstalk which is produced by the transmitting device in the receiving device.
2. The transmitting and receiving device as claimed in claim 1, wherein the compensation device comprises a signal conditioning unit for forming a compensation signal which maps the crosstalk which is produced by the transmitting device in the receiving device.
3. The transmitting and receiving device as claimed in claim 2, wherein the compensation device further comprises a subtraction device which is connected to the receiving device and to the signal conditioning unit, and which subtracts the compensation signal from the received signal produced by the receiving device, thereby forming a modified received signal with reduced crosstalk.
4. The transmitting and receiving device as claimed in claim 3, wherein the signal conditioning unit comprises at least one control connection via which the formation of the compensation signal can be controlled.
5. The transmitting and receiving device as claimed in claim 4, wherein the compensation device further comprises a monitoring unit having an input side connected to receive at least one of the received signal with reduced crosstalk from

the subtraction device and a signal which is proportional to the received signal, and having an output side for driving the signal conditioning unit such that the conditioning unit achieves maximum compensation for the crosstalk.

6. The transmitting and receiving device as claimed in claim 5, wherein the signal conditioning unit comprises at least two controllable subunits, each controllable subunit having an output side connected to a signal adder which uses output signals from the subunits to form the compensation signal.

7. The transmitting and receiving device as claimed in claim 6, wherein each subunit comprises at least one controllable signal attenuation device, one controllable high-pass filter and one controllable signal propagation time matching device.

8. The transmitting and receiving device as claimed in claim 7, wherein the transmitting device comprises an optical transmitting device for converting an input signal that is applied to an electrical input to an optical output signal, and for emitting the optical output signal.

9. The transmitting and receiving device as claimed in claim 8, wherein the input side of at least one subunit of the signal conditioning unit is connected to one of the electrical input and the optical output of the transmitting device.

10. The transmitting and receiving device as claimed in claim 8, wherein the transmitting device comprises an optical transmitting element and a monitor diode which is associated with the optical transmitting element, with at least one of the subunits being connected to a monitor connection of the monitor diode.

11. The transmitting and receiving device as claimed in claim 5, wherein

the monitoring unit is connected to a control connection of the transmitting device, via which the transmitting device can be driven by the monitoring unit,

with the monitoring unit being designed such that it modifies the transmission signal from the transmitting device, in particular by applying additional signals to it, or switches it off, in order to optimize the drive for the signal conditioning unit.

12. The transmitting and receiving device as claimed in claim 11, wherein

the monitoring unit has a measurement unit for measurement of the received signal, whose crosstalk has been reduced, from the subtraction device, or of a signal which is proportional to it,

the monitoring unit has a register in which control signals for driving the controllable signal conditioning unit are stored, and

the monitoring unit has a control unit which selects the respectively suitable control signals as a function of the measurement values from the measurement unit.

13. The transmitting and receiving device as claimed in claim 12, wherein the output side of the register is connected to at least one digital/analogue converter unit, which converts the control signals from the register from digital to analogue form.

14. The transmitting and receiving device as claimed in claim 3, wherein the transmitting device is an optical transmitting device which converts an input signal, which is

applied at an electrical input, to an optical output signal, and emits this optical output signal.

15. The transmitting and receiving device as claimed in claim 14, wherein the input side of the signal conditioning unit is connected to the transmission device.

16. The transmitting and receiving device as claimed in claim 15, wherein the signal conditioning unit is connected to the electrical input or to the optical output of the optical transmitting device.

17. The transmitting and receiving device as claimed in claim 15, wherein the optical transmitting device has an optical transmitting element and a monitor diode which is associated with the optical transmitting element, with the signal conditioning unit being connected to a monitor connection of the monitor diode.

18. The transmitting and receiving device as claimed in claim 15, wherein the signal conditioning unit has at least two controllable subunits, whose output sides are connected to a signal adder, which uses the output signals from the subunits to form the compensation signal.

19. The transmitting and receiving device as claimed in claim 18, wherein each of the subunits has at least one controllable signal propagation time matching device, one controllable signal attenuation device or one controllable high-pass filter.

20. The transmitting and receiving device as claimed in claim 19, wherein the signal conditioning unit has at least one control connection via which the formation of a compensation signal can be controlled, with a monitoring unit being connected to the at least one control connection, with

the received signal, whose crosstalk has been reduced, from the subtraction device or a signal which is proportional to it being applied to the input side of the monitoring unit, and with the output side of the monitoring unit driving the signal conditioning unit so as to achieve maximum compensation for the crosstalk.

21. The transmitting and receiving device as claimed in claim 20, wherein the monitoring unit is connected to a control connection of the transmitting device, via which the transmitting device can be driven by the monitoring unit, with the monitoring unit being designed such that it modifies or switches off the transmission signal from the transmitting device in order to optimize the drive for the signal conditioning unit.

22. A transmitting and receiving device comprising:  
a transmitting device for producing an optical transmission signal in response to an electrical transmission signal;

a receiving device for generating an electrical received signal in response to an optical received signal;

means for modifying the electrical received signal in response to the electrical transmission signal such that crosstalk between the transmitting device and the receiving device is at least partially removed from the electrical received signal.

23. A transmitting and receiving device comprising:  
a transmitting device for producing an optical transmission signal in response to an electrical transmission signal;

a receiving device for producing an electrical received signal in response to an optical received signal; and

a compensation device including:

means for generating a compensation signal in response to the electrical transmission signal; and  
meansfor generating a modified received signal in response to both the electrical received signal and the compensation signal,  
wherein the compensation signal is generated and combined with the electrical received signal such that crosstalk between the transmitting device and the receiving device that is present in the electrical received signal is at least partially removed in the modified received signal.